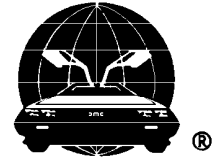


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DeLorean Owners Association Regional Chapter 41



April 14, 1996

Recent Events

by Knut Grimsrud

The '96 kickoff pizza party and chapter business meeting was a bust. I had zero members show up for the event and I ended up taking some pizza to go instead. Since officers have not been elected for the new year, Chapter 41 is technically defunct.

I did take the opportunity to resign as part time events coordinator which was approved by unanimous vote (me). See the sidebar for more related info.

The Portland St. Patrick's Day Festival was more successful. We had three cars on display at the festival and as always we were very well received by the public as well as by Kell's Irish Pub & Restaurant which sponsors the event yearly. We had exhibit fees waived and were allocated space directly in front of the festival area.

I marvel at the misconceptions people have about DeLoreans at such exhibits. This year, the top three quotes were:

1. Me: "The DeLorean was the only mass-produced cars manufactured in Ireland in modern years." Visitor: "Oh, I see! Everyone in Ireland drives cars like these!"
2. After having noticed there is no engine under the bonnet: "So how far can you go before you have to re-charge the batteries?"
3. "These are pretty nice, where can I get a new one?"

I appreciate the support of the other two members who went to great lengths to attend the festival. One member drove from the coast in order to display his car, and the other diehard brought his uninsured treasured possession on a U-Haul trailer that he rented just for the occasion.

We drew as big a crowd as any of the festival exhibits, and I admit that it takes a little patience dealing with curious crowds. During the day we had periods of hands-on where we would let interested spectators sit in the cars (it's a bit of fun to see the reaction of kids and enthusiasts when you allow them to get a little more contact with the cars). This would easily get out of hand and required careful supervision -- I believe we all escaped unscathed although a thorough cleaning of the cars was in order by the end of the day.

Because of the good public reception we receive, Kell's solicits our participation and I expect they will again next year.



Message From Your Coordinator

We have had two poorly attended events since my last newsletter and the last several events have had poor turnout. In order to attempt to better address the interests of Chapter 41 members, I will be attempting to find a new events coordinator than can better meet your needs. In the meantime, I will keep you informed of auto related events that I am personally planning on attending in the event you may share similar interests. If you would like to suggest a group event and volunteer to make arrangements for it, please let me know.

Turbo Manifold Twin-Turbo

Contributing article by Christopher Shepherd

When I started to look for another DeLorean I was specifically looking for a 5 speed with a Twin Turbo. I had owned a stock automatic in the 80's. That one was my only car at the time and I drove it for 4 years before reluctantly parting with it. Insurance at that time was the major reason, and thankfully the insurance companies seem to have come to their senses.

I found my car in Hemmings and called the owner as soon as I got the magazine. He was the original owner and had bought the turbo setup when it was Dicor. Sounds too good to be true, doesn't it? Due to the weather (California was flooded at the time) I couldn't get back from there (Oregonians are not the only ones to enjoy winter flooding).

After a couple of calls and a lot of weather related frustration I sent Dr.Woods a deposit. After a couple of weeks I was able to fly down and see the car. The only thing really wrong with the car was the headliners. It even had the original tires on it, so I was reasonably certain the mileage was correct. Also, you can tell a lot by talking to the owner of any car you are thinking of buying.

I've got to say I had second thoughts when I got it up to speed leaving San Jose. It coughed and wheezed when I put my foot down. It didn't seem to want to leave stoplights either. I'm thinking I may have to find a place to do some serious tinkering before I go too much farther. I'm getting low on gas when I get to Santa Rosa so I get it filled with Supreme. I never needed anything but regular in the old one but, what the hell, why not. About five miles later I start to pass a slow car, whoooosh. What? I'm about ten car lengths past him before I can react. What a rush! All I needed was better gas? No kidding, that's all it needed.

The rest of the trip home was great. I ran away from a Corvette and a Z passing a couple of campers in southern Oregon. They caught up

after I slowed down to make a pit stop and were shaking their heads as they went by. Heh, heh, heh.

I should say that my car looks absolutely stock, for those of you that haven't seen it. The Twin-Turbo system is great. It consists of a matched pair of IHI Turbos and quite a few modifications to other engine parts. The distributor has to be re-curved to prevent too much pre-ignition when the boost comes on. The boost is very subtle. It doesn't come on all at once, but rather, seems to swell up. It's fairly modest at seven pounds but the effect is very good. I've done a couple of things since, to bring it more into line with the present configuration.

At risk of sounding like a salesman, I can't say enough about Eleanor Rogers, the owner of Turbo Manifold Co. I had no documentation on the system so I called her and offered to buy any information she had and she just sent it to me without charge. She also gave me the name and phone number of an installer that she uses. He's great too. He told me how to check the system to ensure that everything had been done correctly. We've had a couple of conversations -- too bad he's in Long Island. One of his clients has modified the engine, forged pistons etc., is running twelve pounds of boost and has nitrous-oxide injection. Hmmm.

The system is expensive. \$3,800 for the kit, according to the documentation I have. I talked to Eleanor recently and she said that the cost, to her, for the IHI Turbos just went up \$300 each. These prices don't include installation so I would guess you'd have a minimum of \$5,500 in it when complete unless you do it yourself. It really doesn't appear too complicated, just time consuming.

Editor's Note: Chris Shepherd is a skilled goldsmith in Nehalem. His twin-turbo equipped DeLorean is his second, and he is quite knowledgeable with DMC's. He has applied some interesting performance modifications to his car that I encourage you to examine at the next event.



Tech Notes

by Knut Grimsrud

Since my last newsletter, I have had few technical problems to report on my car. The minor problem I encountered was quickly diagnosed and readily fixed. Hopefully, by relating my experiences, you may likewise diagnose similar problems quickly and painlessly.

Cooling System Revisited

Having used my car in cool conditions during the winter months, I did not realize that my cooling system was not performing properly since the typical overheating telltale was not manifest. As the conditions improved, however, I encountered my first overheating problem recently.

As you likely know, the cooling system on the DeLorean is somewhat delicate and requires that it be well maintained in order to yield optimum performance. Although conceptually simple, it has a couple sore spots that need to be looked after.

The most common problem (which I occasionally encounter, especially after having removed the coolant reservoir cap for fluid level inspection) stems from vapor lock of the water pump. The water pump in the DMC is located fairly high in the cooling circuit, and air bubbles tend to collect in this high spot over time (either after it has sat for a long time, or after the system gets a “burp” induced by removing the reservoir cap while there is still some residual pressure in the system). Once a sufficiently large air bubble collects in the water pump, it fails to circulate coolant. I admit to carrying a 10mm box wrench in my car for the very purpose of bleeding air out of the cooling system. Simply loosen the nipple on the water pump to let the air escape and you are on the road again. Care should be taken to avoid scalding yourself and be advised that some fluid will sputter from the nipple onto the muffler and various belts. This may slime your belts causing them to slip and squeal.

Once your water pump vapor locks, your engine will quickly overheat and can be damaged if left unchecked.

In my particular case, the thermal switch installed in the coolant return pipe from the radiator failed causing the cooling fans to no longer operate. The cooling fans should come on whenever the temperature reaches one needle-width above the 160 degree mark (the narrow mark below the 220 degree mark on the gauge). The water pump thermostat should open one needle-width below the 160 degree mark.

Due to the cool conditions, my engine temperature has not reached a needle-width above 160 degrees since last fall, so I was surprised when the temperature recently rose above the mark after the car had been idling for an extended period. The cause of the increased temperature was inoperative cooling fans.

Now to my point about the vapor lock -- there are a number of reasons why your cooling fans may fail to operate, a vapor locked water pump being one of them (other reasons include a failed thermal switch, blown fuse, and a failed fan module -- especially if you have not updated your relay compartment with new modules and fan-fail bypass circuit). When the water pump stops operating, the coolant does not get heated evenly and the thermal switch sits in a localized cool spot thinking that all is OK. Should the fans activate (possibly with a manual override switch) it would do no good anyway, since the cool coolant in the radiator does not get pumped to the engine.

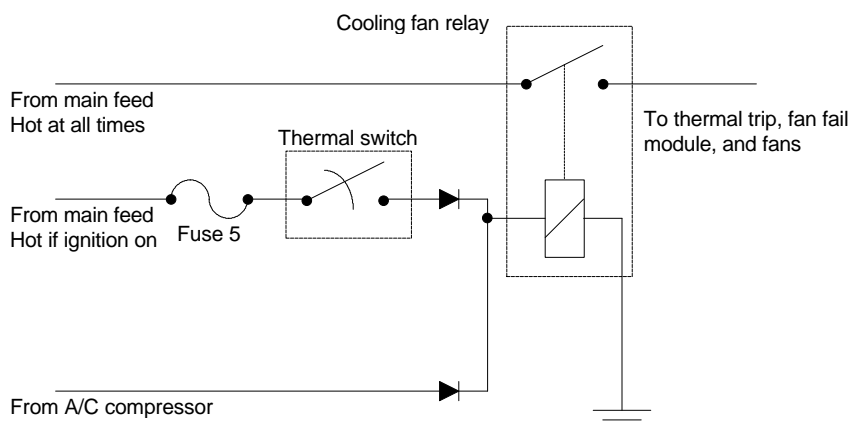
In my case, the thermal switch had failed. The thermal switch measures the temperature of the coolant, and when the coolant temperature reaches a threshold, it closes a circuit. The diagram in the figure illustrates the simple circuit that the switch sits in. This is basically the same figure presented a couple issues back, but includes more detail in the area of discussion.

In a situation like mine, a fan bypass switch would have been handy for getting me home to perform some repairs. Other emergency techniques you may try include cranking your heater to max in order to have it double as a radiator for dissipating some of the heat, or minimizing stop & go traffic (if possible). Flipping the A/C on for a moment will also run your fans for a while until the A/C pressure is built up, but this also taxes your engine causing it to generate more heat -- the verdict is still out on that one.

The thermal switch can be found in the coolant pipe on the left side of the engine compartment. The switch can most easily be recognized when looking up underneath the car from behind the left rear tire. It points downward and has a connector with a couple wires coming from it.

If you suspect a failed thermal switch (sometimes referred to in the DMC manuals as an otterstat), you can readily check the integrity of the rest of your system using a couple simple techniques. First let your car warm up to the point where the fans should engage (do not overheat your car to the point of thermonuclear meltdown). Verify that the switch should in fact be engaged by checking the temperature of the coolant around the thermal switch using a probe-type thermometer and touching it against the metal coolant pipe near the switch. If you have no suitable probe thermometer, skip that step -- though you will be less certain of the diagnosis.

Disconnect the two leads to the thermal switch and short them together -- manually closing the circuit the thermal switch was supposed to close for you. If the fans come on, the likely culprit is the thermal switch (provided you verified the temperature as I suggested). If the fans do not come on, there is a problem elsewhere in your system. You can still verify that the thermal



switch is working by connecting an ohm-meter across the thermal switch contacts and verifying that it has in fact closed.

Ask the Tech Director

Do you have a nagging problem and would like a little advice? Are you sometimes let down in your hour of need by a temperamental loved one? Are you curious what the future holds for an ailing friend? Don't call the Psychic Friends Hotline, submit your questions to the Technical Director.

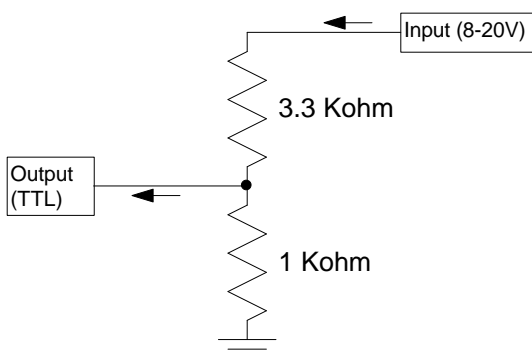
Although I am not your technical director, I am happy to forward any inquiries you may have to our Technical Director, Chris Myers, who seems to know the DMC-12 inside and out and follow up with appropriate comments in the next issue Tech Notes section. I may even attempt to address a trivial problem myself on occasion -- please remember that free advice is sometimes worth what you pay for it.

Manual Fan Override Project

In my previous article, I discussed interfacing TTL parts with your car's 12V supply and driving TTL parts with a simple clocking circuit. In this article I will discuss how you interface TTL circuits to input signals from various 12V sources and how to drive 12V loads from TTL devices.

There are many ways in which to receive input signals with TTL devices -- the optimal method varies with what is producing the signal. If a TTL part is producing the signal, you simply connect the signal to an input on your TTL device. In your car, most signals of interest are 12V (from various switches, sensors, and the like) but TTL devices will burn out if they receive input signals higher than their 5V (typical) rating.

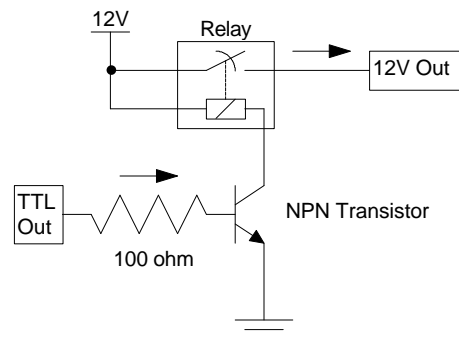
There are several ways to adapt high voltage (12V) signals for input to TTL devices including opto-isolation and the like. These techniques provide a very robust interface that will protect the TTL devices from voltage surges and ground loops. For our simple circuit, this is overkill since ground loops are difficult to come by in a car (there is only one master power source and one ground reference) and the voltage spikes can be fairly easily controlled.



The circuit in the figure shows a simple voltage divider circuit that is sufficient for receiving 12V input signals with a TTL device. Although the voltage in your car varies significantly, the

properties of TTL allow the circuit to work across a broad range of voltages. The circuit divides the input voltage by 4 (approximately) for interfacing with TTL parts. Since TTL will recognize an input signal provided the voltage is between about 2V and 5V, the simple circuit will work with your car's system voltage varying anywhere between 8V and 20V. Please note that some signals in your car are very high voltage and that these signals may not be connected to your circuit. Such signals are usually those involved with your car's ignition.

Driving 12V signals with TTL circuits is slightly more complicated. Not only must the voltage be about 12V, but most auto systems require significant amounts of current (power) to drive them. TTL parts produce output signals of less than 5V and typically drive 4 to 20mA (milliamps)-- barely enough to light up a low power LED, and not particularly useful for most car applications.



Again there are many fancy techniques that will work, but the circuit in the figure will suffice for most applications. The TTL signal is first run through a transistor which amplifies the signal enough to drive a relay. The relay is used to drive the applicable auto system. The size of the relay depends on how much current (power) you need to deliver through the relay, and there are many types of relay configurations for driving multiple loads or for switching between loads.

In the next issue, I will cover the digital (TTL) portion of the circuit as well as the circuitboard etching pattern for a small board to integrate the entire circuit onto. As I may have mentioned

before, the final circuit will be extremely flexible allowing control of almost any auto function that requires three (or less) inputs and two (or less) outputs. For example, the circuit can be used as a replacement for a dead wiper control module -- the module has three inputs, one for each wiper switch setting, and one output for the wiper drive.

The first controller we will make of the project is a switch to eliminate a pesky fan bypass switch and to provide a spare switch for some other function. The circuit will attach to the two window control switches and will detect when they are depressed for a very short time to toggle the output relays. One of these relays can be used for the manual fan override project, and the other can be used for something else of your choosing.

If you have suggestions for other car control or automation projects, please give me a call.

Editor's Note: Anyone who can actually make sense of these articles and complete a project will be awarded an honorary engineering degree by Chapter 41.



Chapter 41 Loses Member

Recently Don Broehl passed away unexpectedly. Don was an active member of Chapter 41 and I enjoyed conversing with him at the various events he attended. Our condolences to his wife Charleen and the rest of his family.

For Sale & Wanted

*Advertisement of
DeLorean related items is
provided as a service to
Chapter 41 members free
of charge.*

'81 VIN 2003
Automatic, Black interior
41,000 miles
Asking \$15,000
Contact Knut for info.

Chapter 41 Events Calendar

Sunday Brunch

Date: Sun. May 5
Cruise up the Gorge for Sunday brunch.
Agenda: Annual chapter business
Finalize 1996 events

Due to poor event turnout in the past, I will be making Sunday brunch arrangements based on the RSVPs I receive beforehand. Please RSVP to me no later than May 1 and I will get you event specifics when the arrangements are made.

Upcoming events (to be finalized)

Sat. Jun. 15 Summer tech session and BBQ

Sept. 14th or 15th Join the Pacific Northwest DeLorean Club for Malibu Car Racing in Beaverton.

